GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND PG COURSES(A)
DEPARTMENT OF MATHEMATICS
B.Sc., Honours in Mathematics MINOR
w.e.f 2023-24 Admitted Batch
COURSE STRUCTURE

MATHEMATICS for MINOR

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
I	**II**	1	Differential Equations & Problem Solving Sessions	**3**	**3**
			Differential Equations & Problem Solving Sessions Practical Course	**2**	**1**

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DEPARTMENT OF MATHEMATICS
B.Sc., Honours in Mathematics MINOR COURSE

BLUE PRINT FOR MINOR SUBJECTS

SECTION-A			**5X2=10**
I	**UNIT**	**MARKS**	**CO'S**
1	UNIT-1	2	CO-1
2	UNIT-2	2	CO-2
3	UNIT-3	2	CO-3
4	UNIT-4	2	CO-4
5	UNIT-5	2	CO-5
II **SECTION-B** **5X10=50**			
6 A or B	UNIT-1	10	CO-1
7 A or B	UNIT-2	10	CO-2
8 A or B	UNIT-3	10	CO-3
9 A or B	UNIT-4	10	CO-4
10 A or B	UNIT-5	10	CO-5

GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND PG COURSES(A)
DEPARTMENT OF MATHEMATICS
B.Sc., Honours in Mathematics MINOR (THEORY and Practical)

w.e.f 2023-24 Admitted Batch

SEMESTER	COURSE	TITLE	CREDITS	HOURS	MARKS
II	**I**	Differential Equations	**4**	**5**	**100**

Course Outcomes:

1. After successful completion of this course, the student will be able to
    1. solve first order first degree linear differential equations.
    2. convert a non-exact homogeneous equation to exact differential equation by using an integrating factor.
    3. know the methods of finding solution of a differential equation of first order but not of first degree.
    4. solve higher-order linear differential equations for both homogeneous and non-homogeneous, with constant coefficients.
    5. understand and apply the appropriate methods for solving higher order differential equations.

CO: 1(UNIT-1) **(No. of hours: 12)**

Differential Equations of first order and first degree:

Linear Differential Equations – Bernoulli's Equations - Exact Differential Equations –Integrating factors - Equations reducible to Exact Equations by Integrating Factors - i) Inspection Method ii) $\frac{1}{Mx+Ny}$+ iii) $\frac{1}{Mx-Ny}$

CO: 2(UNIT-2) **(No. of hours: 12)**

Differential Equations of first order but not of first-degree:

Equations solvable for p, Equations solvable for y, Equations solvable for x – Clairaut's equation - Orthogonal Trajectories: Cartesian and Polar forms.

CO: 3(UNIT-3) **(No. of hours: 12)**

Higher order linear differential equations:

Solutions of homogeneous linear differential equations of order n with constant coefficients - Solutions of non-homogeneous linear differential equations with constant coefficients by means of polynomial operators (i) ax Q(x) e = (ii) $Q(x) = Sin\ ax$ (or) $Cos\ ax$

CO: 4(UNIT-4) **(No. of hours: 12)**

Higher order linear differential equations (continued.):

Solution to a non-homogeneous linear differential equation with constant coefficients P.I. of $f(D)y = Q$ when $Q = bx\ k$ P.I. of $f(D)y = Q$ when $Q = e\ axV$, where V is a function of x P.I. of $f(D)y = Q$ when $Q = xV$, where V is a function of x.

CO: 5(UNIT-5) **(No. of hours: 12)**

Higher order linear differential equations with non-constant coefficients:
Linear differential Equations with non-constant coefficients; Cauchy-Euler Equation; Legendre Equation; Method of variation of parameters

Course Outcomes:

1. Those opted this Differential equations can solve different differential equations under one or more conditions.
2. The student can have apply this differential equations in Geometry and Economics, Mechanics etc. They will get knowledge of drawing graphs. Students are capable to calculate intrinsic value of securities.
3. The students have a knowledge to solve the no of problems under various conditions while solving the problems in Engineering and other fields
4. Student acquires knowledge to find Newton's law of cooling and the light of the falling object in the study of engineering physics.
5. Student gets efficiency for finding the proportions of current in the function of current at different times.

Prescribed Text Book: A text book of mathematics for BA/BSc Vol I by N. Krishna Murthy & others, published by S. Chand & Company, New Delhi.

Reference Text Books:

1. Differential Equations and Their Applications by Zafar Ahsan, published by Prentice-Hall of India Pvt. Ltd, New Delhi-Second edition.
2. Ordinary and Partial Differential Equations by Dr. M.D,Raisinghania, published by S.Chand&Company, New Delhi.
3. Differential Equations with applications and programs – S. Balachandra Rao & HRAnuradha-Universities Press.
4. Differential Equations -Srinivas Vangala&Madhu Rajesh, published by Spectrum University Press.